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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/735,408
Applicant: Storer *et al.*
Filed: December 12, 2003
TC/A.AU.: Unassigned
Examiner: Unassigned

Confirmation No.: 2099

Docket No.: 06171.105101 IDX 1024
Customer No.: 20786
Title: Process for the Production of 2'-Branched Nucleosides

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Information Disclosure Statement

Sir:

The citation of information on the accompanying Form PTO-1449, "List of Art Cited by Applicant" is made pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98. A copy of each reference is enclosed. The citation of this information does not constitute an admission of priority or that any cited item is available as a reference, or a waiver of any right the applicant may have under applicable statutes, Rules of Practice in patent cases, or otherwise.

Applicants do not believe any fees are due because this paper is submitted before the mailing of a first Office action on the merits, as under 37 C.F.R. § 1.97(b)(3). However, the Commissioner is hereby authorized to charge any fees due or credit any overpayment to Deposit Account No. 11-0980.

Respectfully submitted,

Sherry M. Knowles
of c/o per [unclear] 36,174
Sherry M. Knowles
Reg. No. 33,052

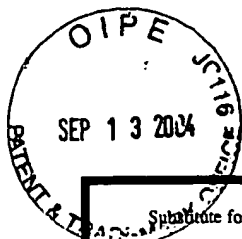
Dated: September 10, 2004
King & Spalding, LLP
191 Peachtree Street, N.E., Atlanta, GA 30303
Office: (404)572-4600/ Fax: 404-572-5145

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1 of 8

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U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages/Relevant Figures Appear	T ⁶
		Number	Kind Code (if known)				
	AA	3,798,209	A	Wilkowski, <i>et al.</i>	03-19-1974		
	AB	RE29,835		Wilkowski <i>et al.</i>	11-14-1978		
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		Office ³	Number	Kind Code ² (if known)				
	BA	DE	3,512,781	A1	Soc. Nat. Elf Aquitaine	10-17-1985		Y
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	BD	EP	0,526,655	A1	Japan Tobacco Inc.	02-10-1993		
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		Office ³	Number	Kind Code ² (if known)				
	CA	WO	01/92282	A2&3	Novirio (Idenix); Univ. ... Cagliari	06-12-2001		
	CB	WO	01/96353	A2	Novirio Pharm. (Idenix); C.N.R.S.	21-20-2001		
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	CK	WO	04/009020	A2	Merck & Co., Isis Pharmaceutical	01-29-2004		

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	CL	BAGINSKI, S. G., <i>et al.</i> , "Mechanism of action of a pestivirus antiviral compound," <i>PNAS USA</i> , 97(14): 7981-7986 (2000).	
	CM	BATTAGLIA, A.M. <i>et al.</i> , "Combination Therapy with Interferon and Ribavirin in the Treatment of Chronic Hepatitis C Infection", <i>Ann. Pharmacother</i> , 34:487-494 (2000).	
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	DA	BROWNE, M.J., <i>et al.</i> , "2',3'-didehydro-3'-deoxythymidine (d4T) in patients with AIDS or AIDS-Related Complex: A Phase I trial," <i>J. Infect. Dis.</i> , 167(1):21-29 (1993).	
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	EI	HOSTETLER, K.Y., <i>et al.</i> , "Greatly enhanced inhibition of Human Immunodeficiency Virus Type I replication in CEM and HT4-6C cells by 3'-deoxythymidine diphosphate dimyristoylglycerol, a lipid prodrug of 3'-deoxythymidine," <i>Antimicrob. Agents Chemother.</i> , 36:2025-2029 (September 1992).	
	EJ	HUNSTON, R.N., <i>et al.</i> , "Synthesis and biological properties of some cyclic phosphotriesters derived from 2'-deoxy-5-fluorouridine," <i>J. Med. Chem.</i> 27:440-444 (1984).	
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of

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Complete if Known

Application Number	10/735,408
Filing Date	December 12, 2003
First Named Inventor	Storer <i>et al.</i>
Group Art Unit	1623
Examiner Name	Unassigned
Attorney Docket Number	06171.105101 IDX 1024

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	FA	KERR, S.G., <i>et al.</i> , "N ⁴ -(dialkylamino)methylene derivatives of 2'-deoxycytidine and arabinocytidine: physicochemical studies for potential prodrug applications," <i>J. Pharm. Sci.</i> , 83(4):582-586 (April 1994).	
	FB	KHAMNEI, S., "Neighboring group catalysis in the design of nucleotide prodrugs," <i>J. Med. Chem.</i> , 39:4109-4115 (1996).	
	FC	KILIANI, H., "Ueber Saccharin und Saccharinsäure," <i>Chemische Berichte</i> , 15:2953 (1882). In <i>German. Partial translation in English at pp. 43-44 of the SOWDEN reference.</i>	see SOWDEN
	FD	KOHN, P., <i>et al.</i> , "A new method for the synthesis of furanose derivatives of aldohexoses," <i>J. Am. Chem. Soc.</i> , 87(23):5475-5480 (December 5, 1965).	
	FE	KUCERA, L.S., <i>et al.</i> , "Novel membrane-interactive ether lipid analogs that inhibit infectious HIV-1 production and induce defective virus formation," <i>AIDS Res. Hum. Retro Viruses</i> , 6:491-501 (1990).	
	FF	KURTZBERG J., <i>et al.</i> , "Differential toxicity of carbovir and AZT to human bone marrow hematopoietic progenitor cells in vitro," <i>Exp. Hematol.</i> , 18(10):1094-1096 (1990).	
	FG	LEONARD, N. J., <i>et al.</i> , "5-Amino-5-deoxyribose derivatives. Synthesis and use in the preparation of "reversed" nucleosides" <i>J. Heterocycl. Chem.</i> , 3:485-489 (December 1966).	
	FH	LERZA, R., <i>et al.</i> , "In vitro synergistic inhibition of human bone marrow hemopoietic progenitor growth by a 3'-azido-3'-deoxy-thymidine, 2',3'-dideoxycytidine combination," <i>Exp. Hematol.</i> , 25(3):252-255 (1997).	
	FI	LEWIS, W., <i>et al.</i> , "Zidovudine induces molecular, biochemical, and ultrastructural changes in rat skeletal muscle mitochondria," <i>J. Clin. Invest.</i> , 89(4):1354-1360 (1992).	
	FJ	LEWIS, L. D., <i>et al.</i> , "Ultrastructural changes associated with reduced mitochondrial DNA and impaired mitochondrial function in the presence of 2'3'-dideoxycytidine," <i>Antimicrob. Agents Chemother.</i> , 36(9):2061-2065 (1992).	
	FK	LEWIS, W., <i>et al.</i> , "Fialuridine and its metabolites inhibit DNA polymerase γ at sites of multiple adjacent analog incorporation, decrease mtDNA abundance, and cause mitochondrial structural defects in cultured hepatoblasts," <i>Proceedings of the National Academy of Sciences, USA</i> , 93(8): 3592-7 (1996).	
	FL	LI, N.-S., <i>et al.</i> , "2'-C-branched ribonucleosides. 2. Synthesis of 2'-C- β -trifluoromethyl pyrimidine ribonucleosides," <i>Organic Letters</i> , 3(7):1025-1028 (2001).	
	FM	LOHMANN V., <i>et al.</i> , "Biochemical and kinetic analyses of NS5B RNA-dependent RNA polymerase of the Hepatitis C virus," <i>Virology</i> , 249, 108-118 (1998).	
	FN	LOPEZ-HERRERA, F.J., <i>et al.</i> , "A new synthesis of 2-C-methyl-D-ribo-1,4-lactone and the C-(1C-13 fragment of methynolide," <i>J. Carbohydrate Chemistry</i> , 13(5):767-775 (1994).	

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	GA	LOPEZ APARICIO, F.J., <i>et al.</i> , "Synthesis of saccharinic acid derivatives," <i>Carbohydrate Res.</i> , 129:99 (1984).	
	GB	LUH, T.-Y., <i>et al.</i> , "A convenient method for the selective esterification of amino-alcohols," <i>Synthetic Communications</i> , 8(5):327-333 (1978).	
	GC	McCORMICK, J., <i>et al.</i> , "Structure and total synthesis of HF-7, a neuroactive glyconucleoside disulfate from the funnel-web spider <i>Hololena curta</i> ," <i>J. Am. Chem. Soc.</i> , 121(24), 5661-5664 (1999).	
	GD	MCKENZIE, R., <i>et al.</i> , "Hepatic failure and lactic acidosis due to fialuridine (FIAU), an investigational nucleoside analogue for chronic hepatitis B", <i>N. Engl. J. Med.</i> , 333(17):1099-1105 (1995).	
	GE	MEDINA, D. J., <i>et al.</i> , "Comparison of mitochondrial morphology, mitochondrial DNA content, and cell viability in cultured cells treated with three anti-Human Immunodeficiency Virus dideoxynucleosides," <i>Antimicrob. Agents Chemother.</i> , 38(8):1824-8 (1994).	
	GF	MEIER, C., <i>et al.</i> , "Cyclic saligenyl phosphotriesters of 2',3'-dideoxy-2',3'-dideoxythymidine (d4T) – A new pro-nucleic approach." <i>Bioorganic & Med. Chem. Letters</i> 7(2):99-104 (1997).	
	GG	MEYER, R.B., Jr., <i>et al.</i> , "2'-O-Acyl-6-thioinosine cyclic 3',5'-phosphates as prodrugs of thioinosinic acid," <i>J. Med. Chem.</i> 22: 811-815 (1979).	
	GH	NEIDLEIN, R., <i>et al.</i> , "Mild preparation of 1-benzyluloxyminoalkylphosphonic dichlorides: Application to the synthesis of cyclic phosphonic diesters and cyclic monoester amides," <i>Heterocycles</i> 35:1185-1203 (1993).	
	GI	NOVÁK, J.J.K. & SORM, F., "Nucleic acid components and their analogues. CXX. 2-C-methyl-D-ribose and its derivatives," <i>Collection Czechoslov. Chem. Commun.</i> , 34:857-866 (1969).	
	GJ	NOVÁK, J.J.K., "Chiroptical properties of 2-methyl-1,4-lactones; revised absolute configuration of 2-deoxy-2-C-methyl-erythro-D-pentono-1,4-lactones," <i>Collection Czechoslov. Chem. Commun.</i> , 39:869-882 (1974).	
	GK	NUTT, R.F., <i>et al.</i> , "Branched-chain sugar nucleosides. III. 3'-C-methyladenine", <i>J. Org. Chem.</i> , 33:1789-1795 (1968).	
	GL	OLSEN, et al. (Oral Session V, Hepatitis C Virus, Flaviviridae; 16 th International Conference on Antiviral Research (April 27, 2003, Savannah, Ga.) p A76).	
	GM	PAN-ZHOU, X-R, <i>et al.</i> , "Differential effects of antiretroviral nucleoside analogs on mitochondrial function in HepG2 cells," <i>Antimicrob. Agents Chemother.</i> 44:496-503 (2000).	
	GN	PIANTADOSI, C., <i>et al.</i> , "Synthesis and evaluation of novel ether lipid nucleoside conjugates for anti-HIV-1 activity," <i>J. Med. Chem.</i> 34:1408-1414 (1991).	
	GO	PIERRA, C., <i>et al.</i> , "Comparative studies of selected potential prodrugs of β -L-dC, a potent and selective anti-HBV agent," <i>Antiviral Res.</i> , 50:A79 (2001), Abstract no. 138.	

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	HA	RICHMAN, D.D., <i>et al.</i> , "The toxicity of azidothymidine (AZT) in the treatment of patients with AIDS and AIDS-Related Complex," <i>N. Engl. J. Med.</i> , 317(4):192-197 (1987).	
	HB	SCHEIBLER, C., "Ueber das Saccharin und die Saccharinsäure," <i>Chemische Berichte</i> , 13:2212-2217 (1880). <i>In German.</i>	
	HC	SOMMADOSSI J-P, <i>et al.</i> , "Comparison of cytotoxicity of the (-)- and (+)- enantiomer of 2',3'-dideoxy-3'-thiacytidine in normal human bone marrow progenitor cells," <i>Biochemical Pharmacology</i> 44(10):1921-1925 (1992).	
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	HL	YARCHOAN, R., <i>et al.</i> , "Long-term toxicity / activity profile of 2',3'-dideoxyinosine in AIDS or AIDS-related complex," <i>The Lancet</i> , 336(8714):526-529 (1990).	
	HM	YOSHIDA Y, <i>et al.</i> , "Reversal of azidothymidine-induced bone marrow suppression by 2',3'-dideoxythymidine as studied by hemopoietic clonal culture," <i>AIDS Res. Hum. Retroviruses</i> , 6(7):929-932 (1990).	
	HN	ZON, G., "Cyclophosphamide Analogues," Chapter 4 in <u>Progress in Medicinal Chemistry</u> , Vol. 19, G.P. Ellis and G.B. West, Eds., pp. 205-246 (1982).	

Not available, but also not needed based on description in Sowden article:

Justus Liebigs Annalen Chemie, 213:361 (1883). KILIANI, H.,

BK	WO	00/24355	A1	Smith & Nephew Kinetic	05-04-2000		
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